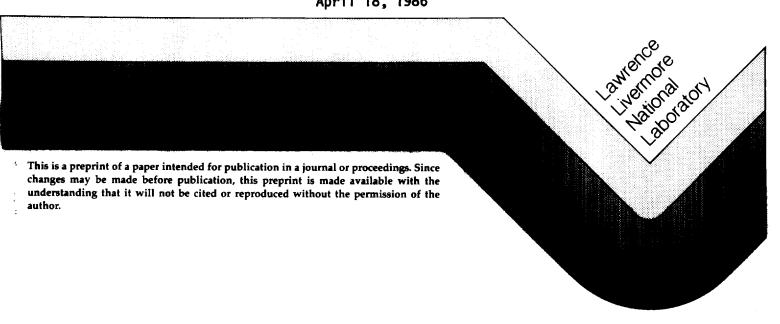
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THE Be-Tc (BERYLLIUM-TECHNETIUM) SYSTEM

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The Be-Tc (Beryllium-Technetium) System 9.01218 (98)

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Equilibrium Diagram

[67Buc] reported that the superconducting transition temperature of BeamTc is 5.21 K. No other compounds have been found to date.

The melting point of β Be and the β Be \rightarrow α Be allotropic transformation temperature are 1289 \pm 4 and 1270 \pm 6 °C, respectively [85BAP]. The melting point of Tc is 2204 \pm 50 °C [81BAP].

Crystal Structures

A summary of crystal structure and lattice parameter data is given in Table 1. The crystal structure of Be₂₂Tc is assumed to be the same as that of Be₂₂Re [850ka].

[80Tan] predicted the possible existence of a stable or metastable compound, BeTc, having CsCl-type crystal structure from the study of a series of alloys based on Be.

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- 80Tan: L.E. Tanner, "The Stable and Metastable Phase Relations in the Hf-Be Alloy System," <u>Acta Metall.</u>, 28(12), 1805-1816 (1980). (Crys Structure; Theory)
- 81BAP: "Melting Points of the Elements", <u>Bull. Alloy Phase Diagrams</u>, 2(1), 145-146 (1981). (Equi Diagram; Compilation)
- 81Kin: H.W. King, "Crystal Structures of the Elements at 25 °C", <u>Bull</u>.

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- 85BAP: to be published in <u>Bull</u>. Alloy Phase Diagrams (1985). (Equi Diagram; Compilation)

850ka: H. Okamoto and L.E. Tanner, "The Be-Re (Beryllium-Rhenium) System," to be published in <u>Bull</u>. <u>Alloy Phase Diagrams</u> (1985). (Equi Diagram; Review)

Table 1 Be-Tc Crystal Structure and Lattice Parameter Data

Composition, Phase at.% Tc	Pearson	Struktur- bericht lesignation	Space group	Proto- type	Lattice a	paramete	ers, nm Reference
(βBe) 0	c12	A 2	I m3 m	W	0.25515		[82Kin]
(α Be) 0	hP2	A3	P6⇔/mmc	Mg	0.22857	0.35839	[81Kin]
Be _{sss} Tc 4.3	cF184		Fd3m	$Zn_{2}Zr$?		(a)
(Tc) 100	hP2	EA	P6 ₃/mm.c	Mg	0.2738	0.4394	[81Kin]

⁽a) Analogy to BezzRe is assumed.

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